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DEPARTMENT OF TRANSPORTATION
NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C. 20591

OFFICE OF
THE CHAIRMAN

June 4, 1970

A70-27

Honorable John H. Shaffer
Administrator
Federal Aviation Administration
Washington, D. C. 20590

Dear Mr. Shaffer:

The most recent failure of a P/N 576801 Pratt & Whitney JT3D first-stage fan hub and disk assembly on April 18, 1970, resulted in serious injury to several crewmembers and passengers, as well as total destruction of a McDonnell-Douglas DC-8-62 aircraft. The failure was due to a material defect which was not detected during processing of the raw material or subsequent manufacture of the part.

Seven failures of first-stage fan assemblies have occurred over the past 5 years. Numerous and repeated failures of critical rotating components of other models of turbine engines have also been investigated by the Board during this time period. The Board recognizes the variations in failure modes and failure mechanisms as they relate to each specific occurrence. However, we are concerned that there may be some factor common to these incidents associated with the design and manufacturing practices pertaining to the failed components. The Board's concern in this area is further accentuated by the even more destructive potential of new generation fan and compressor components should similar failures occur.

To reduce the probability of operational failures of critical rotating components of turbojet and turbofan engines, the Board recommends the following actions:

1. Review regulatory requirements pertaining to inspection standards, process specifications, inspection procedures, and methods dealing with the processing of raw materials and alloys utilized in the manufacturing of critical rotating components of turbine engines, to determine the adequacy of present requirements.

2. Review for adequacy, and consistency with current technological capabilities, the inspection processes, procedures, and equipment being utilized during the manufacturing and associated inspections of critical rotating components of turbine engines.

3. Initiate appropriate action to provide additional assurance that critical rotating parts of turbine engines, such as the P/N 576801 fan hub and disk assembly of the Pratt & Whitney JT3D engine, which are presently in service or which are scheduled to go in service, are free of defects which could culminate in failure of such parts.

It is recommended that the above actions be implemented at the earliest possible dates consistent with the overall objective of an acceptable level of safety.

This subject has been reviewed by our staff with members of your Flight Standards Service staff. Should any further discussions regarding this matter be desired, please feel free to contact us.

Sincerely yours,

John H. Reed

John H. Reed
Chairman